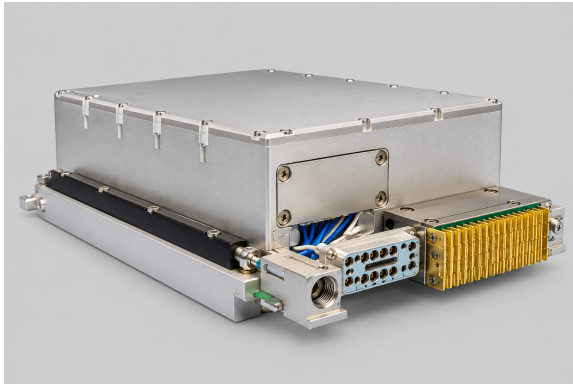


Dual Function Reference Generator



TRAK TECOM has developed a cutting-edge Reference Generator designed for military airborne environments, focusing on ultra-low phase noise and high reliability under harsh vibration.

KEY FEATURES OF THIS MODULE INCLUDE:

100 MHz Electronic Vibration Compensated OCXO

Ensures precise frequency stability and ultra-low phase noise even in harsh, vibration-prone conditions typical of airborne military environments.

Phase-Locked S-band Frequency Output

Fixed frequencies available in 100MHz increments from 2 GHz to 4.5 GHz. Provides a stable and low-phase-noise S-band reference frequency, phase-locked to the 100MHz reference, useful for ADC/DAC clock or frequency conversion LO, for Electronic Warfare and Radar applications in military systems. The frequency of this output must be specified at the time of order.

Distribution Subsystem

Offers multiple outputs, including:

- Up to eight sinusoidal 100 MHz signals
- Ten 100 MHz LVDS outputs for digital interfacing
- Up to four Sinusoidal S-band outputs, providing clock or LO to independent channels
- Five 1PPS LVDS outputs derived from the 100 MHz

Features & Benefits

- 100 MHz electronic compensated XO
- Phase-locked S-band frequency output
- Frequency distribution subsystem - multiple 100MHz and S-band outputs
- Internal BIT (Built-In Test)
- Compact form factor

Applications

- System master reference
- ADC/DAC clock or LO for frequency conversion
- Ideal for use in challenging environments
- Airborne RADAR and EW Systems
- Also useful for Communications Systems

Internal BIT (Built-In Test)

Real-time system status monitoring for detecting faults and ensuring the reliability of the Reference Generator during operations.

Form Factor

The Reference Generator is packaged in a 3U Open VPX (VITA 65) standard, offering a modular high-performance solution that integrates seamlessly with other Open VPX systems. Custom form factors can be provided to accommodate specific system requirements, making it adaptable to various integration needs.

This combination of advanced components ensures the Reference Generator performs optimally in critical military applications, maintaining high precision and reliability under demanding conditions.



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Dual Function Reference Generator

100 MHz Output Performance

Signal Output Type	Sinusoidal, referenced to 50 ohm impedance			
Frequency Accuracy at beginning of life	±1 ppm over operating temperature			
Aging	1 st year	±0.25 ppm		
	Up to 10 years	±1.75 ppm		
Number of Outputs	8 max			
Output Power Level	4 outputs +7.5 dBm ±1.5 dB 4 outputs +10 dBm ±1.5 dB			
Output VSWR	1.5:1 max			
Harmonics	-50 dBc max			
Spurious	10 Hz to 2 kHz	-110 dBc max		
	>2 kHz to 10 MHz	-90 dBc max		
	>10 MHz	-75 dBc max		
Phase Noise	Freq Offset	Static (max)	Dynamic (max)	@PSD
	10 Hz	-104 dBc/Hz	-79 dBc/Hz	0.16 G ² /Hz
	30 Hz	-117 dBc/Hz	-81 dBc/Hz	0.64 G ² /Hz
	100 Hz	-134 dBc/Hz	-116 dBc/Hz	0.0025 G ² /Hz
	600 Hz	-146 dBc/Hz	-124 dBc/Hz	0.1 G ² /Hz
	1 kHz	-154 dBc/Hz	-129 dBc/Hz	0.1 G ² /Hz
	2 kHz	-157 dBc/Hz	-133 dBc/Hz	0.02 G ² /Hz
	10 kHz	-159 dBc/Hz	-149 dBc/Hz	N/A
	100 kHz	-163 dBc/Hz	-159 dBc/Hz	N/A
	1 MHz	-163 dBc/Hz	-163 dBc/Hz	N/A

S-Band Frequency Output Performance

Frequency	Specified fixed frequency, from 2 GHz to 4.5 GHz (available in 100MHz increments)			
Signal Output Type	Sinusoidal, referenced to 50 ohm impedance, locked to internal 100MHz OCXO			
Frequency Accuracy at beginning of life	±1 ppm over operating temperature			
Aging	Same as the 100 MHz reference, in ppm (see above)			
Number of Outputs	4 max			
Output Power Level	+18 dBm ±1.5 dB			
Output VSWR	1.5:1 max			
Harmonics	-40 dBc max			
Spurious	-75 dBc max			
Phase Noise (representative for a 3 GHz output)	Freq Offset	Static	Dynamic	Vib PSD
	10 Hz	-63 dBc/Hz	-45 dBc/Hz	0.16 G ² /Hz
	30 Hz	-74.8 dBc/Hz	-47 dBc/Hz	0.64 G ² /Hz
	100 Hz	-92 dBc/Hz	-82 dBc/Hz	0.0025 G ² /Hz
	600 Hz	-102 dBc/Hz	-91 dBc/Hz	0.1 G ² /Hz
	1 kHz	-103 dBc/Hz	-91 dBc/Hz	0.1 G ² /Hz
	2 kHz	-104 dBc/Hz	-91 dBc/Hz	0.02 G ² /Hz
	10 kHz	-107 dBc/Hz	-100 dBc/Hz	N/A
	100 kHz	-111 dBc/Hz	-111 dBc/Hz	N/A
	1 MHz	-140 dBc/Hz	-140 dBc/Hz	N/A



Dual Function Reference Generator

Module Performance

Differential 100MHz Outputs		
Signal Type	LVDS TIA/EIA-644, locked to internal 100MHz OCXO	
Number of Outputs	10	
Duty Cycle	50% ±5%	
Spurious	10 kHz to 1 MHz	-100 dBc
	>1 MHz to 50 MHz	-90 dBc
BIT Detectors		
Signal Type	LVCMOS	
Number of Outputs	4	
Functions	100 MHz Output Power Status S-Band Output Power Status 100 MHz LVDS Output Status S-Band PLL Lock Status	
Power		
+5 VDC	1700 mA	
+12 VDC	600 mA (max at cold start -40°C)	
	350 mA (Steady State at +25°C)	
Environmental		
Operational Temperature Range	-40°C to +71°C (case temperature)	
Storage Temperature Range	-54°C to +100°C (ambient air)	

